US008010545B2

(12) **United States Patent**
Stefik et al.

(10) **Patent No.: US 8,010,545 B2**
(45) **Date of Patent: *Aug. 30, 2011**

(54) **SYSTEM AND METHOD FOR PROVIDING A TOPIC-DIRECTED SEARCH**

(75) Inventors: **Mark J. Stefik**, Portola Valley, CA (US); **Lichan Hong**, Mountain View, CA (US); **Stuart K. Card**, Los Altos, CA (US); **Peter L. Pirolli**, San Francisco, CA (US)

(73) Assignee: **Palo Alto Research Center Incorporated**, Palo Alto, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 266 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **12/354,681**

(22) Filed: **Jan. 15, 2009**

(65) **Prior Publication Data**

US 2010/0057716 A1 Mar. 4, 2010

Related U.S. Application Data

(60) Provisional application No. 61/092,727, filed on Aug. 28, 2008.

(51) **Int. Cl.**
G06F 7/00 (2006.01)
G06F 17/30 (2006.01)

(52) **U.S. Cl.** **707/758**; 707/781

(58) **Field of Classification Search** 707/999.001–999.01

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,257,939 A 11/1993 Robinson et al.
5,369,763 A 11/1994 Biles
5,530,852 A 6/1996 Meske et al.
5,671,342 A 9/1997 Millier et al.
5,680,511 A 10/1997 Baker et al.
5,724,567 A 3/1998 Rose et al.
(Continued)

FOREIGN PATENT DOCUMENTS

EP 1571579 9/2005
(Continued)

OTHER PUBLICATIONS

Rocha L. M., "Adaptive Webs for Heterarchies With Diverse Communities of Users," Workshop From Intelligent Networks to the Global Brain: Evolutionary Technology, pp. 1-35 (Jul. 3, 2001).
Arasu et al., "Searching the Web," ACM, New York, NY, US, pp. 2-43 (Aug. 1, 2001).
C. Holahan, "So Many Ads, So Few Clicks," BusinessWeek, p. 38 (Nov. 12, 2007).
G. Miller, "The Magical Number Seven, Plus or Minus Two: Some Limits on our Capacity for Processing Information," Psychological Review, vol. 63, pp. 81-97 (1956).
(Continued)

Primary Examiner — Usmaan Saeed
(74) *Attorney, Agent, or Firm* — Patrick J. S. Inouye

(57) **ABSTRACT**

A system and method for providing a topic-directed search is provided, which advantageously harnesses user-provided topical indexes and an ability to characterize indexes according to how articles fall under their topical organizations. A corpus of articles and an index that includes topics from the articles is maintained. For each topic, a coarse-grained topic model is built, which includes the characteristic words included in the articles relating to the topic and scores assigned to the characteristic words. A search query is executed against the index. The topics that match the search terms are chosen by their scores. The topics that match the coarse-grained topic models and the articles corresponding to the search query are presented. In contrast to conventional search engines, search results are organized according to topic and search results can be offered across multiple indexes, where part of returned results are selected from most-relevant indexes with their most-relevant topics.

16 Claims, 11 Drawing Sheets